

MSFC ISHM and Automation Capabilities Supporting Moon to Mars Operations

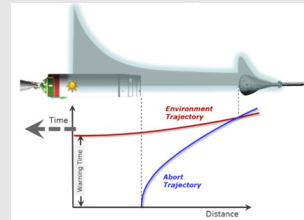
POCs: tristan.lane@nasa.gov, peter.berg@nasa.gov

System Design Focus

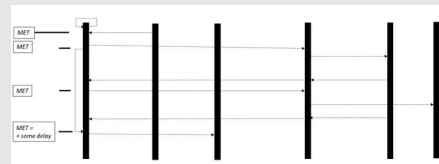
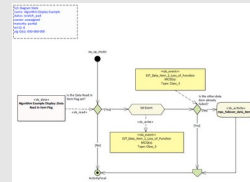
- SysML Activity and Sequence Diagrams
- Goal Function Tree and Functional Decomposition
- Abort Effectiveness
- False Positive / True Positive Analysis
- Fault Propagation / State Analysis Modeling
- Mission and Contingency Planning
- Redundancy Management
- Message Storming
- Mission Timelines
- Test Success Criteria Development
- Flight/Test Data Analysis
- Sensor Data Qualification
- Autogenerated cFS tables



Fault Propagation and Real-Time Simulation Environments



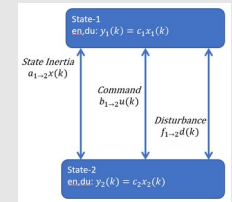
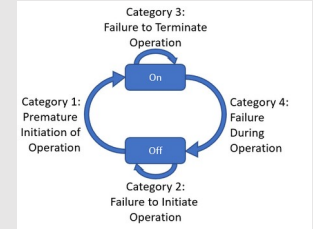
Trigger Effectiveness Analysis



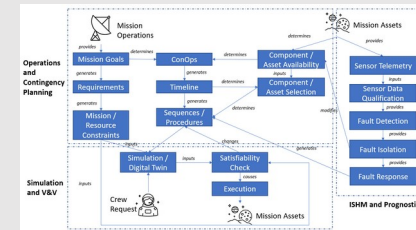
Activity and Sequence Diagrams for Algorithm Design

Growing Technologies

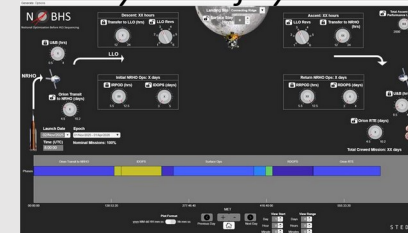
- **MSFC Center Innovation Fund:**
 - *Advanced Internally Redundant Load Switching Power Distribution System*
 - *Autonomous Fail-Active State-Space Fault Management*
- **Tech Excellence (Pending):**
 - *Development and Evaluation of Intelligent Mission Operating Systems (DEIMOS) Lab*



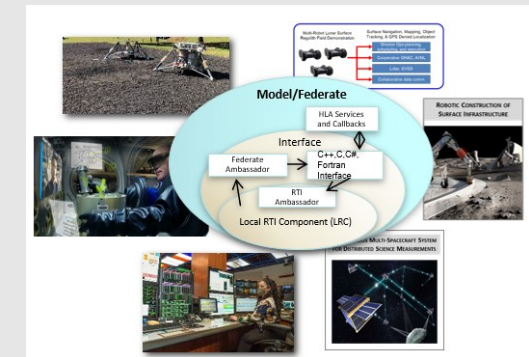
Systems of Systems Focus



Architecture for a Self-Reliant System of Systems



Cross-System Mission and Contingency Planning and Resource Optimization



Federated Simulations